

TVG425 Release Notes

Revision: 3.4.26 (4454)

2014-06-30



1 Overview

This document contains the SW revision history for TVG425 Transport Stream Gateway. The release note is cumulative, each chapter is describing changes since the previous released version.

2 Upgrade instructions

- Software upgrade of the device should – if possible – be done at a time when the device is not in use for critical signal transmission.
- Always take a backup of the device's current configuration before doing the upgrade (use Device Info > Save/load Configs > Save Configuration in the device's GUI).
- Have a copy of the original software file currently in use at hand, in case of a need for reverting to the last operational state.

2.1 How to upgrade

- Log into the unit as admin using any web browser. Navigate to Device Info > Maintenance > Software Upgrade and click on Browse. Then upload the software image (*.out) from your file system.
- After the software is loaded the unit will reboot and load the new software image. Loading the new software image takes the same amount of time as a normal reboot, which may take from 45-90 seconds.
- It is possible to upload the software to the unit, and postpone the reboot operation. The old software will be used until the next reboot. This is done by ticking off the Reboot on success option on the Software Upgrade page.
- If you have T-VIPS Connect, refer to the T-VIPS Connect User's Manual on how to upgrade several units.

3 Release 3.4.26 Dunmore East

3.1 Release date 2014-06-30

Maintenance release with several fixes.

3.2 Fixes

- Cleaned up IP input labels when using IP diversity.
- Fixed an issue when removing one channel of an IP diversity channel pair.
- Fixed an issue where RIPv2 would not work correctly when changing IP parameters.
- Improved overall performance by adding some missing compiler optimizations.

4 Release 3.4.16 Tres Arroyos

4.1 Release date 2013-10-16

This release features RIPv2 and some patches.

4.2 Features

4.2.1 RIPv2

Added support for RIPv2 signaling for IP output streams in order to support network-controlled multicast redundancy. RIPv2 message configuration is set per individual IP output stream, and the metric can be set manually or automatically based on TS alarm status. RIPv2 requires manual Ethernet interface selection and use of IP source address override (two redundant senders must use the same virtual source IP address).

4.2.2 DHCP

Added auto-IP assignment to link-local IP address if an interface is configured to use DHCP for automatic assignment of IP address and no DHCP server is answering. Auto-assignment uses first available address in range 169.254.1.0 - 169.254.254.255, checking availability according to RFC 3927.

The main purpose of this feature is to be able to connect to a device on a known IP on a back-to-back link if it has previously been set up for DHCP but no longer is connected to the network with DHCP support.

4.2.3 Alarms

Added support for TR101-290 Level 2 PCR jitter alarm, both OJ (overall jitter) and AC (accuracy) measurements.

4.2.4 IP outputs

Added option to control RTP SSRC identification field transmitted, to overcome compatibility issues with other manufacturer that expect SSRC ID on Data and FEC to be the same.

Added trace-route function on each output to trace network route to uni-cast destination addresses.

4.2.5 GUI

Change to make GUI start on last visited sub-page when logging onto a device.

Time settings page has been changed so that time sources are added to the list in stead of being pre-defined.

Alarm descriptions have been added to the alarm details for each alarm.

Trace route tool added on Device Info => Network => Tools page.

4.3 Fixes

4.3.1 IDR

Fixed a bug in channel numbering causing IP channels defined after adding a diversity pair would not work.

Improved status on latency difference in tool-tips on Status page.

4.3.2 IP inputs

Fixed a bug that would cause problems with synchronizing to IP streams where TS priority bit set in TS header on PID values 0x100-0x1ff.

Fixed a bug that could cause calculation of latency to erroneously increase when receiving a signal with packets out of order and row FEC present and processed. Bug was introduced in 3.1.6.

Fixed another bug in receiving signals with out of order packets, when not receiving FEC, causing drop of data if buffering (presumed netw.jitter) was set too low.

Fixed missing handling of IP address changes due to DHCP client assignment. Input filters were not configured correctly for uni-cast receives.

Fixed a bug in handling of advanced parameter 'expected PCR accuracy'. It would be configured with default value after a boot, or after changing 'Prefered init. rate mode'.

5 Release 3.2.6 Ordes

5.1 Release date 2013-06-12

This is a patch release with a few minor fixes and improvements

5.2 Alarms

- Improved source text for IP and Stream alarms.
- SNMP Trap: Fixed missing source unitEventSourceText field for “Detailed” description.

5.3 Embedded redundancy

- Added all Embedded redundancy alarms to global alarm list.
- Fixed an issue where one could get “Poll failed” alarm with Content error.

5.4 Other

- Fixed an issue where “Ethernet link down” alarm would not be triggered if enabling interface and no link present.
- A few GUI tweaks.

6 Release 3.2.2 Cheratte

6.1 Release date 2013-04-17

This release bring some new features and a new Nevion look and feel.

6.2 Embedded Redundancy

The new Embedded Redundancy feature enables automatic redundancy failover switching between a main and spare TVG425 device, and does not require any external management system control. Switching is performed on a stream-by-stream basis and can be performed on link loss or stream alarm level conditions. For more information please refer to the Users Manual. Embedded Redundancy is a licensed feature (/ER).

6.3 DHCP Client

Added support for automatic IP address assignment by DHCP client. Configurable per interface.

6.4 DNS

Registration of user supplied host name at DNS server via the DHCP server for identification of the host by name on the network. Hostname is specified per interface.

Optional use of hostname instead of IP address to identify a unicast destination for video data transmission.

6.5 Bugfixes

- Fixed a rare issue in the RX FEC engine when receiving both FEC Row and FEC Column before a row of Data.

6.6 Licensing

The following table lists the available SW options in this SW version.

Table 6.1 The list of licensed features in this version

Key	Function
TSOX	Number of streams that can be used.
ISW	Input switching.
FEC	Forward error correction, both input and output.
TCON	Connect control. Enables management of a device with the Connect Tool.
SFP	SFP slot support.
SFPC	Enables configuration of some telco variants of SFPs.
SFNR	Rate locking to MIP/1PPS.
IDR	Enables RTP/IP Diversity reception
ER	Embedded Redundancy (New in 3.2.2)

7 Release 3.0.12 Januaria

7.1 Release date 2013-02-04

New main release, bringing a number of features and fixes.

7.2 ASI inputs/outputs

7.2.1 Input bitrate limit

Added option for monitoring the bitrate and block forwarding of signal if rate exceeds a configured threshold, to avoid over allocating the output.

If signal is stopped due to excessive bitrate, an alarm is set (Input overflow with bitrate details) and nothing is let through.

7.2.2 DC/Idle on output

You can now choose whether ASI outputs should send ASI idle symbols or go to DC (Electrically off) when no data is transmitted.

7.3 IP inputs/outputs

7.3.1 IP/RTP diversity switching

Implemented IP/RTP diversity switching. Two streams that have synchronous RTP encapsulation, i.e same TS packets carried with same RTP sequence number, can join buffer for redundancy purposes.



Warning: Diversity switching introduces some structural changes to the XML configuration. Auto-porting of configurations from earlier versions is implemented when upgrading, but some parameters may be lost if you downgrade from a 3.x.x version or newer to an older SW version. Parameters affected are “Presumed IP jitter” and all buffer regulator parameters.



Note: FEC is not supported on diversity pairs by now.

7.3.2 FEC

Increased maximum allowed dimensions of FEC matrixes.

Table 7.1 New and old FEC matrix limits

Parameter	New limit	Previous Limit
D (Depth)	32	32
L (Length)	250	32
L + D	254	32
L * D	1024	256



Note: Using larger FEC matrixes means increased need for buffering on the receiver.

7.3.3 Manual IP input bitrate/SFN operation

Added option to configure the bitrate manually on an IP stream, disabling the buffer regulation mechanism. This option works if both the source of the stream and the receiver are locked to external 1PPS reference, and both equipments are of same vendor. The benefit is that there is no fluctuations on the bitrate on the output of the TVG425 due to buffer regulation.

Use case: Transmission of DVB-T2 signal with CP560 and reception with TVG425. Punch in bitrate configured on CP560.

7.3.4 Fast Coarse Mode

Added a new mode labeled Fast Coarse, that can be used on signals with no PCR, and when the signal is forwarded on a new IP link. In this mode, the buffer regulator is allowed to work with less restrictions on changes to the output bitrate, making it handle the less accurate initial bitrate estimates on signals without PCR better.

7.3.5 Cover-UP loss of signal

Added an option to cover up for larger losses of IP input signal by continuing signal with MPEG2 stuffing packets. If input signal is regained within the configured cover-up time, it is re-joined without interruptions to the packet stream, making equipment receiving the output stream not loose TS sync.

7.3.6 204 byte TS packets on IP layer

Added support for 204 byte TS packets on the Ethernet layer. This is configured for each Stream and all small-casts (IP destinations) on the stream share the setting.

If input stream has 204 byte TS packets, the 16 RS bytes from the input are played out, if the input stream is 188 bytes, the 16 RS bytes on the input are 0xff.

7.3.7 Replacement of lost frames

Added use of TS stuffing packets for fragments of input stream that are missing and not recovered by FEC. Previously, old, random TS packets would be played out for such gaps in the stream.

7.4 GUI/General

7.4.1 Logo

Updated GUI with Nevion logo.

7.4.2 Hot upgradable features

Some licenses are now possible to upgrade without rebooting the device, we use the term “hot upgradable” on these licenses.

The “hot upgradable” licences are

- Output transport streams (TSOX)
- Connect control (TCON).

Remark that this means that you retrieve licenses for more Streams to your running TVG425 and start using them without taking down running services.

7.4.3 Configuration ID

New parameter on Device Info->Product Info, that can be used to identify the current configuration of the device when it is used with different sets of fixed configuration.

7.4.4 Load config from host

It is now possible to load configuration directly from another TVG425, by specifying the remote TVG425 IP address.

7.4.5 System report

The Device Info->Maintenance page now features a button labeled “Generate system report”. This is to be used to extract a complete XML information document that can be used by Nevion Support for diagnostics.

7.4.6 PID/Service list

- It is now possible to measure bitrates per 10s instead of 1s to get more averaging.
- Numbers (service IDs and PIDs) can now be shown in either decimal or hexadecimal format on selected pages.

7.5 Fixed issues

7.5.1 Network stack

- Fix to improve TCP/IP (GUI) performance a networks with high delays (GPRS etc).
- Fixed a problem that could cause hang of network stack/HTTP service with consecutive reboot by watchdog. Problem was triggered by preemptively closed TCP connections and would only be visible under certain external conditions.

7.5.2 IP inputs

7.5.2.1 Buffer handling

Fixed an issue with buffer handling that could cause initial buffering (latency) to be set too high on re-sync.

7.5.3 Input port switching

Updated to latest library versions, with a number of improvements and fixes.

7.5.4 Alarms

Some fixes to reduce number of alarms set during a boot and IP input channel re-sync. This includes filtering of TS CC errors for a few seconds after channel re-sync.

7.6 Licensing

The following table lists the available SW options in this SW version.

Table 7.2 The list of licensed features in this version

Key	Function
TSOX	Number of streams that can be used.
ISW	Input switching.
FEC	Forward error correction, both input and output.
TCON	Connect control. Enables management of a device with the Connect Tool.
SFP	SFP slot support.
SFPC	Enables configuration of some telco variants of SFPs.
SFNR	Rate locking to MIP/1PPS.
IDR	Enables RTP/IP Diversity reception (New in 3.0.12)

8 Release 2.6.18 Clinchfield

8.1 Release date 2012-03-07

Patch release with some minor bug fixes.

8.2 Input switching

- Fixed problems on handling of switch wait timers. Fix made by updating switcher code to latest available implementation that includes a number of other fixes.
- Fixed bug in enabling of auto switching while on a bad port.
- Fixed to make port switchers select highest priority port when in manual mode, in cases where no port is yet selected.
- Fix to make port switch perform switch to a good port when enabling switcher while a bad port. Previously switcher would generate an alarm, and not switch.
- GUI status now differs between manual and automatic switches performed. SNMP returns sum of the two.
- The parameter “Reswitch wait” has been renamed to “Return wait” in the GUI.
- Extended the max ranges for switch wait and switch hold timers from 60 and 30 respectively, to 9999 seconds for both.

8.3 SFN operation

- Added support for the 2 alarms related to 1PPS input, that were missing.

8.4 PID rate too low alarm

- Fix on the “PID rate too low” alarm that could be set erroneously.

8.5 Other

- Fix to avoid a potential problem when adding a too long user label on a port.

9 Release 2.6.14 Cherokee

9.1 Release date 2012-02-29

Patch release with a couple of fixes described below.

9.2 ASI low-level input

Fixed problem with TS packet scheduling, that could cause long pauses from a signal was inserted to it was propagated to the output. Problem was only observed on ASI signals in spread mode.

9.3 IP input

Fix for handling of TSoIP input streams with 4 packets per frame. Unit would de-encapsulate such streams correctly.

9.4 Input switching (/ISW)

Fixed a bug that in rare cases could cause input port switching based on critical alarm level not to happen correctly.

Fixed a few problems related to setting of alarms on input port switching, most probable when switching IP sources.

There was a high probability of the alarm “Unable to switch” being set during a switch, even though the switch was actually performed correctly.

There was a high probability of the alarm “Switch performed” being filtered on a switch of active IP source, even though the switch was performed as expected.

An expected side-effect of the above alarm fixes should be that switching takes place faster when loosing lock on an IP source.

10 Release 2.6.8 Herwijnen

10.1 Release date 2011-08-19

Follow up release with a few patches and adding support for a new ASI card and dual power shelf.

10.2 Licensing

No changes, see [Table 12.1](#).

10.3 Features

- Official support for dual power shelf.
- Support for a new ASI card (2020.D).

10.4 Fixes

- Fixed problem with IGMPv3 source specific joining. The problem was introduced in version 2.0.6
- Fixed a problem with FEC transmission. Transmission could fail (Unable to transmit alarm set), when enabling FEC transmission with skew. This would only fail if FEC was not previously used without skew on the stream. Typically transmission would fail after power cycling when skew FEC was enabled in the configuration.
- Fixed GUI issue on Stream config page when not having input switching feature installed. Error message reading “ASI X part of Unknown” would be displayed in red.

11 Release 2.6.2 Rushton

11.1 Release date 2011-06-15

Follow up release on the FEC release, with a couple of fixes. This version also implements the /SFNR option.

11.2 Licensing

There are not changes of the SW licensing in this version. Please refer to [Table 12.1](#) for a complete list of the SW options.

11.3 Features

11.3.1 SFNR

This option makes it possible to lock the IP RX buffer using an external 1PPS input, when the received IP stream is an SFN signal with MIP packets that can be used to find the modulation parameters and thereby the bitrate.

11.4 Fixes

11.4.1 FEC

- Optimizations on FEC transmission to improve max throughput when transmitting both Column and Row FEC.
- Added minor on-hysteresis on the “too low latency for FEC” alarm.
- Fixed a bug causing unit to crash (reboot) when removing IP sources when not having the FEC licence key installed.

11.4.2 ASI input/spread mode

- Fixed problem with handling of low bitrate (less than ~2.5 Mbit/s), spread mode, ASI input signals.

11.4.3 SNMP

- Changed logic on saving configuration to file after receiving SNMP set requests. Previously settings were stored every 4 seconds, causing longer set sequences to be delayed by the storing process. Now storing is postponed with 4 new seconds for every new set.

- Also improved speed on database content validation when setting parameters within the ports collection, to reduce time spent on individual SNMP sets herein.



Note: Parameters can be set more efficiently by packing more than one OID into a multi variable binding set.

- Added *tsoutTransparentUserLabel* to be able to configure the user definable label on each stream via SNMP.

11.4.4 Alarms

- Fixed input CC error check to generate errors if packets without payload do not keep the previous CC value.

12 Release 2.0.6 Edmonton Int. Apt.

12.1 Release date 2011-05-13

Main release with FEC support as main new feature. Extends patch release 1.4.30.

Be sure to make a back-up of your configuration before upgrading from an earlier version.

12.2 FEC

- FEC is now available both on input and output IP streams. FEC is a licensed feature.
- Matrix sizes are limited to $L+D \leq 32$, $L \cdot D < 256$, which slightly exceeds the numbers specified in Cop3.
- For IP TX sub-channels (small-casts), one can configure transmission of column FEC, column+row FEC or turn off FEC individually on each sub-channel, the FEC matrix size and skew however being shared between all the sub-channels.
- New SNMP tables enabling management of FEC parameters via SNMP agent.

12.3 Licensing

- New licence (TSOX) limiting the number of 'Streams' that can be active at the same time. This licence replaces the TSIX licence that was used to limit the number of input ports that can be active at the same time. Units produced before this release, have to be updated with a new licence to make the unit work as before.
- Unit displays a new licence SFNR, which will enable locking of an IP input buffer using external 1PPS reference. This function is being developed at the time of this writing.
- ASIN and IP licences no longer in use.

Table 12.1 The list of licensed features in this version:

Key	Function
TSOX	Number of streams that can be used simultaneously (TSIX, ASI and IP no longer used)
ISW	Input switching
FEC	Forward error correction, both input and output.
TCON	Connect control. Enables management of a device with the Connect Tool.
SFP	SFP slot support
SFPC	Enable config of some telco variants of SFPs.
SFNR	Rate locking to MIP/1PPS (not implemented in 2.0.6, but coming up)

12.4 IP sources

- Max input buffering changed from 4Mb to 8Mb per IP source.
- Some improvements on bitrate measurement for buffer regulation.
- Improvement on handling of initial buffer filling when syncing to a stream with packet losses.
- Added a parameter on IP sources to increase catch range of buffer regulator to be able to handle streams with very large offsets on the incoming PCR clock. Receiving streams from PC could yield PCR clock offsets of >25ppm, increasing the catch range of the regulator could enable reception of such streams.
- Improved details on NO-DATA alarm, showing info on interface link/enable.

12.5 IP destinations

- Added differentiation on link down and interface disabled on ARP unresolved alarm details.
- Added conflict check on IP parameters used on output. New alarm "Output parameter conflict" set on conflicts.

12.6 Input switching

- Added switching on any critical port alarm on a port in the switch. This means that by configuring any of the alarms in the alarm tree on a port to yield critical severity, you can enable switching based on that specific alarm. It is only the "no sync" alarm ("no lock" for IP sources) that has critical severity level by default.

12.7 SNMP

- A number of optimisations improve performance on SNMP requests, especially get-next operations.

12.8 General

- IP sources and input switches now kept untouched (no picture breaks) when loading a new configuration file where overlapping such elements are defined. This also fixes a problem with hanging alarms on loading of configs with overlapping IP sources.
- Some optimisations on video data handling to improve performance and leave more room for management serving (GUI/SNMP).
- Fixed control of the green LED on the back panel of 8 port ASI mounts, when the port is used as an output. The led would not always be lit as it should.

12.9 Known Issues

- There is a problem with handling of ASI bitrates below ~2.5 MBit/s when input signal is in spread mode.
- There are some problems with FEC on IP streams with 1 TS packet per frame.
- Iterative FEC processing when using 2 dimensional FEC may not be able to correct all theoretically fixable errors when error rate accross all streams is too high.

13 Release 1.4.30 Lyne

13.1 Release date 2011-05-04

Patch release.

13.2 Issues

- SNMP optimisations, especially focusing on SNMP get-next request performance. Some requests could still take in order of seconds to process.
- vgwPlatformTsIpTransportMIB: Changed tsIpInputRxMcAddr max-access from read-only to read-write for control of multicast address.

14 Release 1.4.26 Lowville

14.1 Release date 2011-04-05

Patch release mainly to resolve some problems reported on SNMP server.

14.2 Issues addressed

14.2.1 SNMP server

Fixed some performance issues on the SNMP agent.

Improved performance on accesses on MIB tables in the VIGW-PLAT-TS-MIB.

Multi-variable binding accesses towards empty MIB tables could take seconds to process, stalling the whole SNMP agent. Added an optimisation for this.

Added support for the tsInConfigTable that was missing.

14.2.2 General

Added a fix to reduce back-ground processing when receiving IP streams with RTP errors, leaving more CPU for f.ex GUI serving in such cases.

15 Release 1.4.24 Roberta

15.1 Release date 2011-03-09

Patch release fixing a problem with a pop up error message in GUI.

This build is based on the 1.4 branch, extending the previous release 1.4.22 only with this isolated fix.

15.2 Fixed issues

15.2.1 Support tag 1215

Fixed a mutual access bug seen by the user as an Internal error pop up message in the GUI, normally with a message similar to:

```
Error: Internal error
There was an internal error in the unit.
Please check unit status.
-8: Internal error(Internal error: undefined method 'psisi' for
<#Ts::TsDstLoop:0x..FF11B2BC0>:Ts::TsDstLoop)
```

The problem was most probable to happen when having either multiple WEB browser sessions towards a unit, or having an SNMP client polling the a device and a browser doing access simultaneously.

The bug is not believed to have had any service affecting effects, but would typically interrupt a WEB browser session making it necessary to reload and log in again.

16 Release 1.4.22 Ephraim

16.1 Release date 2011-01-21

Patch release fixing a few issues discovered.

16.2 Fixed issues

- Fixed issue with IP outputs occasionally not transmitting all data from ASI source after booting and configuring for IP transmission. This problem was reported from installation of the first units at customer site and later reproduced in the Lab.
- Fixed a few bugs in the SNMP MIB, where some irrelevant parameters were removed and some others had the wrong data type.
- Fixed a bug causing a false TS unstable alarm when clearing IP input statistics for a port.
- Fixed a problem with the “os mem” debug terminal command that could cause instability on IP input sources when fault finding on a system.
- IP outputs are now tagged with the label “IP” with the address in parenthesis to better show that they are IP outputs.
- TS outputs are now grey in the navigator when disabled.

16.3 New known issues

- The Ethernet link down alarm is not set if booting the device with one of the data ports disabled and no cable in and then enabling the port. Booting with the port enabled and no cable in does set the alarm properly.

17 Release 1.4.14 Glendale

17.1 Release date 2011-01-06

Patch release to fix a few issues with 1.4.12

17.2 Fixed issues

- Fixed a stability issue with ASI output. Stream 4 and stream 7 could occasionally end up transmitting garbled data on ASI after a boot or full configuration file loading. Problem was temperature related. Reboot would be required to fix the problem. All ASI outputs from a hanging stream would transmit the same invalid signal, while any IP output from the same stream would be OK.
- Fixed a potential mutex hang on loading of configuration files on a system with input port switchers.
- Added MIB table to make it possible to read and control BNC port mapping by SNMP.

18 Release 1.4.12 Campo Galliano

18.1 Release date 2010-12-16

This is the first official release of the TVG425 Transport Stream Gateway approved for production use.

18.2 Features

- Added SNMP support for IP/ASI channel control, including port switchers.

18.3 Fixed issues

18.3.1 Known issues from 1.1.9

18.3.1.1 General

- Fixed FPGA routing issues that could cause problems with ASI sync detection.
- Fixed issue with IP routing of management traffic to a VLAN interface.

18.3.1.2 GUI

- Protocol parameter to select between UDP and RTP now also available when using small-casting (more than one IP destination per stream).
- Fixed refreshing of left hand side navigator pane when adding and removing ASI outputs on a stream.
- Fixed bitrate display for ASI outputs on Streams Main tab.

18.3.2 Other fixed issues

18.3.2.1 General

- Fixed threading problem with port switching of IP sources. Previously there was a chance that a switcher would not switch away from an IP source reporting no lock.
- Fix for removal of small cast destination. Data could continue to run on a removed channel.
- Fixed problem with loading of config with no switchers on unit with currently active port switchers. This would cause data routing to be invalid after loading the configuration.

- Fixed problem with updating of port routing table after removing an IP source. This could cause invalid outputs on a config load or on consecutive configurations after removing the IP source.
- Fixed problem occurring when trying to add too many IP sources or too many switch inputs. Unit could end up in a state where it was not possible to add up to the maximum number of possible ports.
- Fixed issue with ARP unresolved alarm not always being set when configuring network or broadcast addresses as destination (0.0.0.0 or 255.255.255.255).

18.3.2.2 GUI

- Fixed refresh of status LEDs in ports list on input switch page.

18.4 Known issues

- No option to sync bitrate to incoming MIP.
- No ASI DC output option on no data input.
- No IP redundancy protocols implemented.
- FEC not implemented yet.

19 Release 1.1.9 Willamette City

19.1 Release Date 2010-11-25

This release is a beta-version of the TVG425 Transport Stream Gateway for demonstration of the product and production of the first units. The version is fully functional, but with a few important issues to be solved.

19.2 Features

- Transparent transport of transport streams from ASI to IP and IP to ASI.
- Two Ethernet interfaces for video transport, a 3rd port dedicated for Control.
- Small-cast option to transmit each transport stream to up to 8 IP destinations.
- SFP module support.
- Flexible use of BNC connectors.
 - Receive 8 IP streams and output on 8 ASI ports
 - Receive 1 IP stream and output on all 8 ASI ports
 - Loop input ASI signal back on another ASI port for monitoring.
- Input port switching on ASI and IP or combos of these. An input switch can switch between more than 2 ports.
- TR 101 290 level 1 TS monitoring of input transport streams.
- Full VLAN interface support for data and management.
- IP routing of management traffic.
- WEB control
- SNMP agent.

19.3 Known issues

- The “Protocol” parameter where you can choose between UDP and RTP on an IP destination stream is not available in the GUI when defining more than one destination stream. Work-around: define the protocol before defining the second destination, or to the change by editing the XML configuration file and load it back.
- If you add an ASI destination on a stream and then remove it, it is not removed correctly in the left hand side navigator. Work-around: Reload GUI.

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- The grid showing the ASI port usage on the Main tab on each stream configuration page is not showing the bitrate correctly for ASI outputs on other streams.
 - Non-optimal FPGA routing with problems on timing can cause problems with sync detection.
 - No SNMP MIB for channel control implemented. General status and alarm readout is available.
 - No option to sync bitrate to incoming MIP.
 - No ASI DC output option on no data input.
 - No IP redundancy protocols implemented.
 - Problem IP forwarding (routing) of IP frames to a VLAN interface. Problem arises when IP fragmentation is needed to forward the frame. Workaround: set MTU on transmitting equipment to < 1496 bytes.